MULTIMEDIA UNIVERSITY ®

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2022 / 2023 (TERM ID 2210)

BBA3034 – BUSINESS ANALYTICS

(All sections / Group)

8th FEBRUARY 2023
9 a.m. – 11 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This question paper consists of 2 pages (excluding cover page) with 4 Questions only.

2. Attempt **ALL** questions. The distribution of the marks for each question is given.

3. Write your answers in the Answer Booklet.

QUESTION 1 [20 Marks]

You are an intern in a large company with a strong on-line presence in Malaysia. Your manager has been invited to make a presentation on Business Analytics to a group of business leaders from different industries. She has asked you to help her prepare for her presentation:

a. What is Business Analytics and why is it becoming increasingly important in the business world?

(2 marks)

b. Describe 4 business problems that can be addressed with Business Analytics and for each problem, describe a machine learning model that can be used to address it.

(8 marks)

c. What are the 6 main steps for implementing a machine learning model?

(6 marks)

d. What are 2 benefits of using machine learning models to analyse business data?

(4 marks)

QUESTION 2 [20 Marks]

iMovie is a company that provides movies for their customers to watch on the internet. Customers have to pay a fee to watch each movie. Whenever a customer visits the iMovie website, iMovie wants to show trailers of movies that they think the customer is likely to be interested to watch.

a. What machine learning model would you propose to iMovie to use to determine which movie trailers to recommend to a customer and why?

(3 marks)

b. What data will be required by the model?

(3 marks)

c. Explain the 6 main steps in implementing the model.

(12 marks)

d. How will you determine the effectiveness of the model?

(4 marks)

QUESTION 3 [5 Marks]

Having good quality data is critical for a successful Business Analytics project. Describe 5 common data quality issues and how they can be resolved.

(5 marks)

Continued ...

QUESTION 4 [5 Marks]

The following dataset contains loan information and can be used to try to predict whether a borrower will default (the last column is the classification).

Loan Id	Home Owner	Marital Status	Annual Income	Defaulted Borrower
1	Yes	Single	High	No
2	No	Married	High	No
3	No	Single	Low	No
4	Yes	Married	High	No
5	No	Divorced	Low	Yes
6	No	Married	Low	No
7	Yes	Divorced	High	No
8	No	Single	Low	Yes
9	No	Married	Low	No
10	No	Single	Low	Yes

You are required to use the Naïve Bayes method to predict whether Loan id X will be a Defaulted Borrower:

Loan Id	Home Owner	Marital Status	Annual Income	Defaulted Borrower
X	No	Married	High	?

a. Compute the probability that a loan customer is a Defaulted Borrower ie P(Defaulted Borrower =Yes) (0.25 marks)

b. Compute the probability that a loan customer is not a Defaulted Borrower ie P(Defaulted Borrower=No) (0.25 marks)

c. Compute the probability that the brorrower is not a home owner given that they are not a Defaulted Borrower ie P(Home Owner=No | Defaulted Borrower=No) (0.5 marks)

d. Compute P(Status=Married | Defaulted Borrower=No) (0.5 marks)

e. Compute P(Income=High | Defaulted Borrower=No) (0.5 marks)

f. Compute P(X | Defaulted Borrower=No) (0.5 marks)

g. Compute P(Defaulted Borrower=No | X) (0.5 marks)

h. Compute P(Defaulted Borrower=Yes | X) (1.5 marks)

i. Should loan id X be classified as a Defaulted Borrower ? (0.5 marks)

End of Questions